

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF THE CLAIMS:

Claims 1-9 (Cancelled).

a 10. (New) An audio apparatus comprising a modulator for modulating a first ultrasonic signal with an audio signal to provide a second ultrasonic signal; a transducer for converting the second ultrasonic signal into an ultrasonic pressure wave for transmission into a non-linear medium to allow demodulation of the ultrasonic pressure wave and thereby generate an audio pressure wave representative of the audio signal wherein the transducer has conversion characteristics that determine a relationship of the ultrasonic pressure wave to the second ultrasonic signal; processing means for modifying the audio signal to compensate for the demodulating properties of the non-linear medium; and means for modifying the audio signal to compensate for the conversion characteristics of the transducer.

11. (New) An audio apparatus according to claim 10, wherein the first ultrasonic signal is amplitude modulated with the audio signal.

12. (New) An audio according to claim 10, wherein the first ultrasonic signal is equal to or greater than 40 kHz.

13. (New) An audio apparatus according to claim 10, wherein the processing means comprises a double integration filter and a square root operator.

14. (New) An audio apparatus according to claim 13, wherein the means for modifying is disposed between the double integration filter and the square root operator.

15. (New) An audio apparatus according to claim 10, wherein the means for modifying is a digital filter.

a 16. (New) An audio apparatus according to claim 10, wherein the characteristics of the means for modifying are empirically derived by tone adjustment.

17. (New) An audio apparatus according to claim 10 comprising a radiotelephone.

18. (New) An audio apparatus according to claim 10 comprising a portable radio device.

19. (New) A method for transmitting an ultrasonic pressure wave into a non-linear medium for demodulation comprising:

modulating a first ultrasonic signal with an audio signal to provide a second ultrasonic signal;

converting, using a transducer having conversion characteristics, the second ultrasonic signal into a ultrasonic pressure wave for transmission into a non-linear medium for demodulation and consequent generation of an audio pressure wave representative of the audio signal;

modifying the audio signal, before modulating the first ultrasonic signal, to compensate for the demodulation properties of the non-linear medium; and

modifying the audio signal, before modulating the first ultrasonic signal, to compensate for the conversion characteristics of the transducer.

a

20. (New) Audio apparatus comprising a modulator for modulating a first ultrasonic signal with an audio signal to provide a second ultrasonic signal; a transducer for converting the second ultrasonic signal into an ultrasonic pressure wave for transmission into a non-linear medium to allow demodulation of the ultrasonic pressure wave and thereby generate an audio pressure wave representative of the audio signal wherein the transducer has conversion characteristics that determine a relationship of the ultrasonic pressure wave to the second ultrasonic signal; processing means for modifying the audio signal to compensate for the demodulating properties of the non-linear medium; and a digital filter for modifying the audio signal to compensate for the conversion characteristics of the transducer.

21. (New) An audio according to claim 20, wherein the first ultrasonic signal is equal to or greater than 40 kHz.

22. (New) An audio apparatus according to claim 21, wherein the processing means comprises a double integration filter and a square root operator.

23. (New) An audio apparatus according to claim 22, wherein the means for modifying is disposed between the double integration filter and the square root operator.

a 24. (New) An audio apparatus according to claim 20, wherein the characteristics of the means for modifying are empirically derived by tone adjustment.

25. (New) An audio apparatus according to claim 20 comprising a radiotelephone.

26. (New) An audio apparatus according to claim 20 comprising a portable radio device.
